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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/597,639

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EXAMINER

LUM, LEON YUN BON

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/597,639	<b>Applicant(s)</b> KAHLMAN ET AL.	
	<b>Examiner</b> Leon Y. Lum	<b>Art Unit</b> 1641	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-17 and 20-25 is/are pending in the application.
- 4a) Of the above claim(s) 4-16, 21 and 23-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2, 3, 17, 20 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 March 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of 2-3, 17, 20 and 22 in the reply filed on May 27, 2010 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-3, 17, 20 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the phrase "a magnetic sensor element which senses a magnetic property [ at least one magnetic particle received by the probe element which magnetic property is related to the generated magnetic field." This phrase is unclear and confusing. First, the "[" symbol appears to have been misplaced and should not belong in the claim. Second, there is no transition phrase between the "magnetic sensor element which senses a magnetic property" and the rest of the claim. It is therefore unclear whether the magnetic sensor element is limited by the rest of the phrase or whether it is an element that is distinct from the rest of the phrase. Applicants are

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requested to clarify this claim. For prior art purposes, the claim is interpreted as reciting two distinct elements: the magnetic sensor element and at least one magnetic particle.

Claims 3, 17, 20 and 22 are vague and indefinite for the same reason above since they are dependent on claim 2.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-3, 17, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,743,639 to Tondra *et al.* ("Tondra") in view of U.S. Patent No. 5,065,093 to Cruden *et al.* ("Cruden") and U.S. Patent 5,486,754 to Nauta *et al.* ("Nauta").

*i. Independent claim 2 is obvious*

Tondra describes an apparatus comprising magnetoresistors on a substrate. See column 13, lines 45-60 and Figure 17 (depicting reference numbers "13" and "14" as the magnetoresistors). The magnetoresistors can be GMR sensors that sense a magnetic characteristic of a bead in the presence of an externally applied magnetic field. *Id.*; see also column 13, lines 23-25. Tondra also teaches that the beads bind to capture sites distributed on an assay surface, and that there can be multiple capture sites. See column 11, lines 46-57 (describing multiple "spots" of reagents across an assay surface) and column 12, lines 1-15. With this description, Tondra teaches a substrate, a probe element supported by the substrate, a magnetic field generator, a magnetic sensor element and at least one magnetic particle as claimed.

Tondra, however, does not teach a cross-talk suppression means.

Cruden states that cross-talk occurs when magnetic fields from external sources interfere with the reading of a particular magnetic sensor. See column 4, lines 41-47.

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Nauta describes a means for screening magnetic fields between two measuring coils, in order to suppress mutual crosstalk. See abstract.

With the foregoing description in mind, one of ordinary skill in the art would have found it obvious to modify Tondra's apparatus by implementing crosstalk suppression means. Cruden indicates that cross-talk can occur due to an external magnetic field. Given this teaching, one of ordinary skill in the art would therefore recognize that Tondra's externally applied magnetic field would interfere with the GMR sensor. Accordingly, the skilled artisan would have been motivated to apply Nauta's screening means in order to suppress the crosstalk. Moreover, because Cruden and Nauta describe cross-talk in terms of a magnetic sensor, the skilled artisan would have had a reasonable expectation of success in combining these references with Tondra.

*ii. Dependent claims 3, 17, 20 and 22 are obvious*

Regarding claim 3, Nauta teaches a screening means, as described above. *Id.*

Regarding claim 17, Tondra describes a guiding flux concentrator to concentrate externally applied magnetic fields. See column 9, lines 30-44.

Regarding claim 20, Tondra teaches a GMR sensor, as described above. *Id.*

Regarding claim 22, Tondra teaches that sample fluid is passed over a sensor and the magnetic bead is used as a label to bind to a molecular species in the sample. See column 1, lines 26-39 and column 2, lines 6-23.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

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unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 2-3, 17, 20 and 22 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 7,508,200 to Kahlman *et al.* (“Kahlman”) alone or in view of the secondary references above.

*i. Claim 1 is unpatentable*

Claim 1 recites a magnetic sensor device comprising a magnetic sensor element on a substrate, at least one magnetic field generator for generating a magnetic field on the substrate, wherein cross-talk suppression means are present for suppressing cross-talk between the magnetic sensor element and the at least one magnetic field generator.

Claims 1-14 of the '200 Patent recite a magnetic sensor that generates an electrical object signal (U) after sensing a magnetic stray field (SF), and also comprises

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a magnetic field generator for generating a magnetic main field (H). The sensor further has a cross-talk reduction means for reducing the effect of a cross-talk signal component in U caused by magnetic cross-talk between H and SF. Accordingly, the claimed magnetic sensor comprising a magnetic field generator, a sensor element and a cross-talk reduction means. With this description, the claims teach the limitations of instant claim 1.

*ii. Claims 2-3, 17, 20 and 22 are unpatentable*

For dependent claims 2-3, 17, 20 and 22, these claims are taught either by the '200 Patent alone or in combination with the references above.

Specifically regarding instant claims 2-3 and 17, the Tondra and Coehoorn references recite the limitations specified in these claims. It would have been obvious to modify the '200 Patent to arrive at the claimed inventions because Tondra and Coehoorn are both directed to using magnetic sensing using a magnetic field generator and sensor, and applying it to biological testing allows the user to determine the presence and concentration of a biological molecule.

Specifically regarding claims 20 and 22, the Kabel reference teaches the storage element. It would have been obvious to modify the '200 Patent by including a storage element as taught by Kabel. The skilled artisan would have made the modification because storing cross-talk information allows the sensor to automatically compensate for the interference.

***Response to Arguments***



Applicants traverse the rejection of pending claims 2-3, 17, 20 and 22 in the response filed February 2, 2010. Although Applicants' arguments have been fully considered, they are not persuasive for the following reasons.

*i. Double patenting rejection*

Applicants opine that because the Kahlman reference is a later-filed application, a two-way obviousness test is required to issue a non-statutory obviousness-type double patenting rejection. See Response, page 17, first paragraph. Applicants are not entirely correct in this assertion. A two-way obviousness test for a non-statutory obviousness-type double patenting rejection is required only if an applicant could not have filed the claims in a single application AND if there is administrative delay. *In re Berg*, 46 USPQ2d 1226 (Fed. Cir. 1998); see also MPEP 804(II)(B)(1)(b). The burden is upon the applicant to show both of these requirements. In this case, Applicants have not given a reason why the claims in the Kahlman patent and the instant claims could not have been filed in the same application. Moreover, nothing in the record gives rise to such a reason. Applicants also have not pointed to an administrative delay in the examination of claims in this application. Lacking such evidence, a two-way obviousness test does not appear to be required. Accordingly, since Applicants have not traversed the merits of the one-way obviousness rejection, it is maintained.

*ii. Prior art rejection*

Applicants argue that Coehoorn is disqualified as prior art since there is at least one common inventor with the instant application and Coehoorn and the instant application are commonly assigned. See Response, page 17, second paragraph.

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Although Applicants did not properly state that the assignment was common at the time the Coehoorn reference was filed (thereby fulfilling the requirement that common assignment be at the time of filing), a review of both Coehoorn and the instant application reveals that they were both commonly assigned to Kononkline Philips Electronics N.V. at the time the Coehoorn reference was filed. Accordingly, all rejections utilizing Coehoorn have been withdrawn.

Applicants traverse the application of Cruden and Nauta as allegedly being directed to non-analogous art. See Response, page 17, third paragraph. Specifically, Applicants point to Cruden's description of a current measuring device and Nauta's description of an inductive proximity sensor. *Id.* In response to Applicants' argument that Cruden and Nauta are nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

In this case, Applicants' field of endeavor is magnetic sensing using magnetic particles in which there are multiple magnetic elements (i.e., magnetic field generator and magnetic sensor element). Applicants' are also concerned with cross-talk between these magnetic elements, as indicated in claim 2. Turning to Cruden and Nauta, both references are concerned with magnetic sensing and specifically describe the problem of cross-talk between magnetic elements. Indeed, Cruden specifically states that external magnetic fields can produce cross-talk with respect to a particular magnetic

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sensing element. See column 4, lines 41-47. This description falls squarely within the particular problem that Applicants are concerned with in the claims. Accordingly, Cruden is analogous art. Moreover, Nauta provides a physical barrier to impede cross-talk between two magnetic elements. This type of barrier is applicable to different types of magnetic embodiments, including the magnetic sensor element claimed by Applicants. Accordingly, Nauta is also analogous art.

Applicants also traverse the application of Cruden and Nauta by arguing that neither reference allegedly suggests that cross-talk compensation is needed to modify Tondra, and that they do not provide an enabling disclosure for such a modification. See page 17, last paragraph. Along the same vein, Applicants take issue with Nauta's description of measuring coils as distinct from the instant claims. See page 18, first paragraph. However, as noted above, Cruden and Nauta describe phenomena that can apply to any embodiment possessing multiple magnetic elements. The external cross-talk described by Cruden is not limited solely to a current measuring device since interfering magnetic signals can arise from any magnetic element. Moreover, Cruden is applicable as a reference not for its description of current measuring devices, but for the notion that external magnetic fields can pose interfering problems with respect to a particular magnetic sensor. Along the same vein, Nauta is cited because it presents a screening mechanism against magnetic fields in general, an arrangement that can be applied to any magnetic sensor. Accordingly, since Tondra describes an external magnetic source that would produce interference with the GMR sensors, one of ordinary skill in the art would have recognized that Cruden and Nauta provide enabling

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disclosures to screen the sensors from the magnetic source and modify Tondra to arrive at the claimed invention.

Applicants further present arguments traversing the rejection of claims 6 and 8. See page 18. However, as these claims have been withdrawn, Applicants' arguments are rendered moot.

### ***Conclusion***

No claims are allowed.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Y. Lum whose telephone number is (571) 272-

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2872. The examiner can normally be reached on Monday to Friday (8:30 am to 5:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark L. Shibuya can be reached on (571) 272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon Y. Lum/  
Examiner, Art Unit 1641